

Ali Kalvand, I. V. Kazachkov

**PROBLEM OF CORIUM MELT COOLABILITY IN PASSIVE PROTECTION SYSTEMS
AGAINST SEVERE ACCIDENTS IN THE CONTAINMENT**

Paper is devoted to the development of the mathematical model and analysis of the problem of corium melt interaction with low-temperature melting blocks in the passive protection systems against severe accidents at the NPP, which is of high importance for substantiation of the nuclear power safety, for building and successful operating of passive protection systems. In the third-generation reactors passive protection systems against severe accidents at the NPP are mandatory, therefore this paper is of importance for the nuclear power safety. A few configurations for the cooling blocks' distribution have been considered and an analysis of the blocks' melting and corium's cooling in the pool under reactor vessel have been done, which can serve more effective for further improvement of the safety current systems and for the development of new ones. The ways for solution of the problems and the methods for their successful elaboration were discussed. The developed mathematical models and the analysis performed in the paper might be helpful for the design of passive protection systems of the corium melt retention inside the containment after corium melt eruption from the broken reactor vessel.

Keywords: model, corium, melting blocks, solidification, coolability.